



# IMPACT OF ESD PEDAGOGY IN DEVELOPING SUSTAINABLE COMPETENCIES OF ELEMENTARY SCHOOL STUDENTS

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## ABSTRACT

Today, the world is facing a variety of problems caused by human development activities such as climate change, biodiversity losses, resource depletion and the expansion of poverty. ESD comprises learning and educational activities that aim to develop alternative values and transformative actions that lead to problem-solving and to realize a sustainable society by taking the initiative to accept these problems of modern society as our own and tackling the problems in our immediate environment (think globally, act locally) in order to ensure that human beings are able to secure an abundant life for future generations. Education for sustainable development's primary concern is the improvement of the quality of life for people without damaging the environment. This can be possible if we reorient our education system and make future generations capable enough to face challenges of life and save environment. This article describes the sustainable competencies and development of this competencies among elementary students, through a learning package which comprises, contents related to sustainable development and ESD pedagogy.

**KEYWORDS:** Effectiveness, Learning Package, Sustainable competencies, Elementary students.

## BACKGROUND OF THE STUDY:

Education for sustainable development (ESD) is about shaping a better tomorrow for all- and it must start today. ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a justified society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society. It also requires participatory teaching and learning methods that motivate and empower learners to change their behaviour and take action for sustainable development. Education for Sustainable Development consequently promotes competencies like critical thinking, imagining future scenarios and making decisions in a collaborative way.

## LITERATURE REVIEW:

The investigator conducted some reviews on different approaches used in different educational institutions by teachers for different level children to develop critical thinking and sustainability awareness and knowledge among them such as (Pellicer 2007), (Atkinson 2007), (Albashaireh 2007), (Behera 2007), (Binkley 2003), (James 2002), (Andrew 2007), (Dass & Deal 2007), (Santi et al. 2007), (Mohd Nor & Assanarkutty 2007) and founded that most of the children participating in the study have gained a deeper knowledge, understanding and idea of sustainability issues environmental education and have been able to address those issues in a local context. There was difference on the achievement of the student's post-test in favour of those who were taught by the systemic approach program.

## RATIONALE OF THE STUDY:

We are responsible for environmental and ecological deterioration. But we should work for a present and future built on the principles of environmental justice, equity and human development. In this regard, the role of education is critical as it is the cornerstone of a modern society. Therefore, in view of the current environmental crisis, the content of education requires restructuring. This would mean that education systems across the world would be required not only to make a person employment worthy, it would have to capacitate people with values that would help them understand their relationship with the society and environment and empower a person lead a life of contentment and satisfaction. In this context, education will have to go beyond mere transfer of information. Sustainable development is one of the central challenges facing the world today. Thus, ESD should not be seen narrowly as another subject or concern to be added onto the formal education system or a workplace training programme. Rather, ESD is a teaching and learning process through which understanding of and orientation towards sustainable development becomes embedded in the core education and learning processes to be found in societies everywhere. In this connection the researcher has go through more than 100 research papers on different aspects of sustainable development like education for sustainable development, environmental education, sustainable development goals, sustainable classroom, campus, integration of sustainability concept in curriculum, sustainability in higher education etc. and found less no. of experimental studies in this area. As it is a very demanding concept to know, to understand, to implement, to integrate, to apply, to do the necessary action for betterment of the environment and society,

the researcher has taken this study.

## Operational Definition:

- **Learning package:** In this study learning package refers to a set lesson plan prepared by the researcher on some sustainable issue undertaken from VIII class science and social science book. The lesson plan was developed by following the ESD pedagogy published on education for sustainable development source book (UNESCO 2012). The teaching techniques such as class discussion, issue analysis and storytelling question answer etc. were used during teaching learning process.
- **Sustainable Development:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Burdland commission 1987).
- **Elementary School:** This refers to the Government schools which provide 8 years of schooling from Class I to VIII within the age group of 6 to 14 years.
- **Sustainable Competencies:** Competencies refer to concepts and skills that enable students to understand and resolve complex sustainability problems and tasks (Frisk & Larson, 2011). Competency refers to any aspect of a competence, such as knowledge, skill, attitude, ability, or learning objective. Competency a combination of skills, underpinning knowledge and experience. Here in this study sustainable competency refers to the knowledge, understanding and skills of the students which enable them to know and understand the concept of sustainable development, and modify their attitude towards a sustainable future.

## OBJECTIVES OF THE STUDY:

1. To evaluate the effectiveness of ESD Pedagogy in developing sustainable competencies among elementary school students.

## HYPOTHESIS:

**H01:** There is no significant difference in sustainable competencies between elementary school students taught through ESD Package and traditional methods of teaching.

## METHODOLOGY OF THE STUDY:

The study was an experimental type of research, the sole purpose being the examination of the effectiveness of sustainable development learning package on developing sustainable competencies and attitude towards sustainable development of elementary students. In the intact situation the pre-assembled groups have been used by the researcher for assigning experimental and control groups. Hence a Quasi experimental design (Pre-test post-test control group design) has been followed in the study.

## Sample and sampling technique:

For the present study the purposive sampling method had been used for selecting sample. One school i.e. Balia NHS, Kendrapara was purposively selected for the sake of convenience in conducting the experiment for the study. Two sections (Section-A & B) of class VIII of Balia NHS was selected as control group and

experimental group respectively. No. of students in each section were 35 and 35 respectively. Students of class VIII studying in Odia medium school follows the course prescribed by the BSE, Odisha, were the sample comprised of both boys and girls.

#### Tools and techniques used:

In this study, a competency test had been developed (based on ten chapters related to sustainable development ideas from science and social science text books of class VIII of Odia medium school to determine their level of competency. It was developed by the researcher to assess the sustainable competencies attained by the students.

#### Procedure of data collection:

Data were collected in three phases i.e. pre-experimental phase, experimental phase and post-experimental phase. Before starting the treatment, the decision about sample, items in competency test, development of learning package and school permission was finalized. During the treatment process, the experimental group was exposed to the ESD Pedagogy and control group was exposed to the traditional approach. The researcher herself was the teacher to teach both the experimental group and control group in sample school separately. During teaching in experimental and control group class, fifteen lessons were delivered. The control group followed traditional method of teaching in which lesson plans were based on objectivity principles of introduction, presentation and evaluation. The treatment period of both the experimental and control groups was four weeks from beginning of academic session. At the end of the experiment, the sustainable competency test and attitude test was administered to both the experimental and control group in order to compare their sustainable competency and attitude towards sustainable development.

#### Procedure of data analysis:

The present study was an experimental and developmental in nature. The data were collected through pre-test and post-test on sustainable competencies of students. The data were analysed quantitatively through application of required statistical techniques, i.e. mean, standard deviation and t-test.

### RESULTS:

#### 1. Impact of ESD Pedagogy on developing sustainable competencies of elementary students.

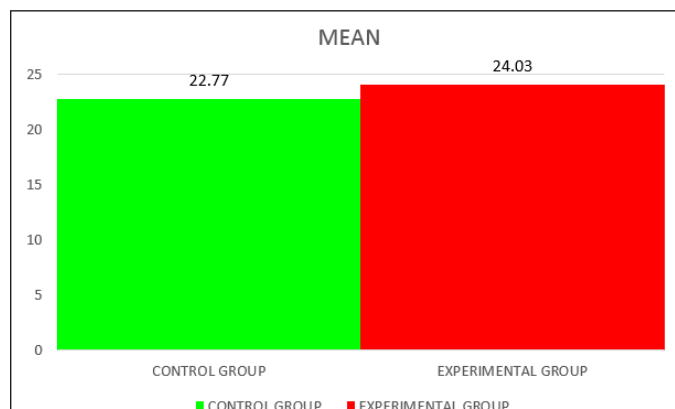
The effectiveness of ESD Pedagogy on developing sustainable competencies of class VIII students was studied through pre-test and post-test control group design using sustainable competency test. This test was developed by the investigator herself which includes knowledge, understanding based and attitude reflected items.

**Table 1: Pre-test mean, SD and t-value of scores in sustainable competencies of both the groups**

Group	N	Mean	SD	df	SED	t-ratio	p-value
Control Group	35	22.77	6.84	68	1.88	0.667	0.507
Experimental Group	35	24.03	8.80				

Table-1 shows the t-value (0.667) of pre-test score of control and experimental group in sustainable competency of students with df-68 is not significant as p-value of 0.507 is greater than 0.05 level of significance. It indicates that there is no significant difference in the pre-test score of experimental group and control group on sustainable competency of students. Hence, pre-test score of control and experimental group students have exhibited similar sustainable competency skills.

Graphical representation of data was also attempted in Figure 1 to display variance in development of sustainable competencies of both the groups before treatment.



**Fig: 1: Bar Diagram Showing pre-test mean scores of sustainable competencies of control group and experimental group.**

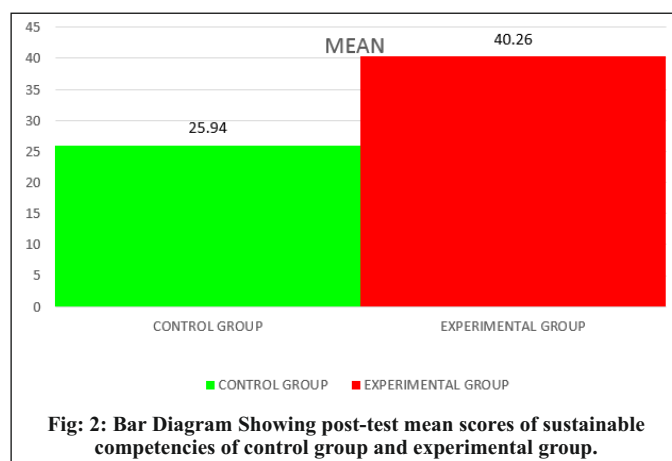
In order to confirm the intervention effect i.e. effect of ESD Pedagogy in developing sustainable competencies of elementary students, the post-test result of competency test scores for both the groups were examined. The post-test mean, SD and t-value of scores in sustainable competencies of both the groups are given in Table-2.

**Table 2: Post-test mean, SD and t-value of scores in sustainable competencies of two groups**

Group	N	Mean	SD	df	SED	t-ratio	p-value
Control Group	35	25.94	7.01	68	1.59	9.011	0.000
Experimental Group	35	40.26	6.26				

Table 2 shows that t-value of 9.011 with df-68 is significant at 0.01 level of significance. It indicates that the sustainable competency score of experimental group taught through ESD Pedagogy differed significantly from control group taught through traditional methods of teaching. From the above table it is found that the mean sustainable competency score of experimental and control group are 25.94 and 40.26 respectively. So, the null hypothesis earlier stated "There is no significant difference in sustainable competencies between elementary school students taught through ESD Pedagogy and traditional methods of teaching" is rejected. Therefore, it may be concluded that learning through the ESD Pedagogy has substantially improved the sustainable competencies among experimental group as compared to the control group taught through traditional method of teaching. The above result supports the earlier research findings of Bhagat & Oraon (2005), Dimitriou, (2007), Dash (2008), Ozturk (2012), Louw (2013), Alexandar & Poyyamoli (2014), Hidalgo & Fuentes (2013), Sims & Falkenberg (2013), Sharma (2016) and Borges (2019).

Graphical representation of data was also attempted in Figure-2 to display variance in development of sustainable competencies of both the groups after treatment.



**Fig: 2: Bar Diagram Showing post-test mean scores of sustainable competencies of control group and experimental group.**

### FINDINGS:

Effect of ESD Pedagogy on developing Sustainable competencies: ESD pedagogy has significant effect on student's sustainable competencies as compared to the traditional method of teaching. The sustainable competency score of the sample students taught through ESD Pedagogy was found to be more than the students taught through traditional method of teaching.

### CONCLUSION:

In order to achieve sustainable development goal and to make society and environment more sustainable, we should prepare our future generations efficient enough. This requires development of sustainable competencies among students. Development of sustainable competencies among elementary students is a challenging task. In this study the developed learning package has a positive impact in developing sustainable competencies among elementary school students.

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